Abstract Submitted
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Molecular Beam Epitaxy of graphene nanocrystals[1] JORGE M GARCIA[2], ULRICH WURSTBAUER, THEANNE SCHIROS, Columbia University, NY, NY, ANNETTE S. PLAUT, University of Exeter, UK, LOREN N. PFEIFFER, Princeton University, NJ, ANTONIO LEVY, Columbia University, NY, NY, CHERNO JAYE , DANIEL FISHER , National Institute of Standards and Technology, Gaithersburg, USA, ABHAY PASUPATHY, Columbia University, NY, N, ARON PINCZUK, Columbia University, NY, NY — The ability to produce large-area graphene films on commonly used dielectric substrates can lead to many technological applications. We demonstrate the fabrication of large area conducting graphene nanocrystalline films on arbitrary dielectric substrates by MBE (molecular beam epitaxy) using a solid carbon source that can offer the integration of capable graphene production with high flexibility and variety in ultra-high vacuum environment together with state of the art thin film technology. Synchrotron x-ray and Raman spectroscopies show that the films consist on graphene nanocrystals oriented parallel to the sample surface. The growth rate is a key parameter that determines the bonding environment. Careful control of the growth conditions results in the production of predominantly sp^2-bonded carbon thin films on arbitrary substrates, with the potential of growing large graphene grains on epitaxial substrates.

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